Workgroup Emotional Climate: Individual Inputs and Group Cohesion

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Jessa L Youso

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Alexandra Luong, Ph.D., Advisor
Eric Hessler, Ph.D., Committee Member
Elizabeth Hill, Ph.D., Committee Member
Christopher Lake, Ph.D., Committee Member

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Abstract

This study examined the relationships between individual differences (i.e., personality traits and trait affect), workgroup emotional climate (WEC), and social cohesion of work teams. Participants were students at a mid-sized university. Specifically, correlations between extraversion, agreeableness, conscientiousness, emotional stability, openness, positive and negative trait affect, and positive and negative WEC were examined using correlational analyses and hierarchical linear modeling. Group cohesion was assessed as an outcome variable of WEC. Some individual-level variables significantly related to WEC and high positive WEC was positively related to cohesion. Implications and future research are discussed.

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Understanding how emotion influences the ways we navigate the social world is important to help us best form and maintain relationships personally and professionally. A substantial body of research across a variety of disciplines (Keltner & Haidt, 2001) has examined the role of emotions within a myriad of relationship types including romantic, parent-child, friendship, coworker, and others (Levenson & Gottman, 1983; Eibl-Eibesfeldt, 1989) This research has grown substantially over the years to include theories regarding individual emotion as well as group emotion. For instance, when the individual is the unit of analysis from which functions of emotions are interpreted, research has focused on the links between emotion and neurological structures (Davidson, 1993; LeDoux, 1996) or emotion and memory, perception, or judgment (Frijda, 1986; Lazarus, 1991). When the group is the system of focus, research has centered on how emotions can help understand how individuals interact while pursuing shared goals of the group. Distinct types of groups such as families, sports teams, or work groups are examples of systems from which the function of emotions are interpreted at the group level (Clark, 1990).

The current study is focused on emotion in groups and examines how personality traits, including affect, may influence processes involving shared group membership. Particularly, this study will examine the relationships between personality traits and the emotional climate of a workgroup. Before delving into specifics of the current study, a general overview of concepts related to emotion, affect, and groups will be presented.

Emotion and Affect

Appropriately understanding emotion cannot be accomplished without defining the difference between emotion, mood, and affect. Emotions are usually typified as short

in duration, object-oriented, and intense in their experience (Frijda, 1986). In contrast, moods are generally experienced over a longer period of time with a lower, more sustainable intensity (Tellegen, Watson, & Clark, 1999). Affect is defined as expressed mood (Forgas, 1995), and, like moods, can be either positive or negative in orientation. Importantly, positive or negative affect is different from mood in that affectivity can be understood as a personality trait that influences the way individuals react to their environments (Jordan, Lawrence, & Troth, 2006).

Teams Research

An increasing number of organizations are relying on teams (or groups) in the workplace as the primary resource for accomplishing goals and improving productivity (Lawler, Mohrman, & Ledford, 1992, Kozlowski & Bell, 2003). This is because factors such as increasing global competition, merger, and need for innovation put pressure on organizations to quickly become more adaptive and productive (Kozlowski & Klein, 2000). Teams are useful in addressing these factors, and as a result, organizations have a vested interest in understanding how groups operate and what can be done to make teams more productive (Barrick, Stewart, & Mount, 1998).

Throughout this paper, the terms “workgroup”, “group”, and “team” are used interchangeably because all three terms encompass the same underlying characteristics. In general, group members identify with one another and are defined by others as being part of a group (Barrick et al., 1998). Although teams and groups exist in a variety of sizes and types that range across varying contexts, functions, and processes within organizations, several key features apply to all groups (Alderfer, 1977; Hackman, 1987; Hollenbeck, Ilgen, Sego, Hedlund, Major, & Phillips, 1995; Kozlowski, Gully, McHugh,

Salas, & Cannon-Bowers, 1996; Kozlowski, Gully, Nason, & Smith, 1999; Salas, Dickinson, Converse, & Tannenbaum, 1992). Kozlowski and Bell (2003) state that work teams and groups:

1. Are composed of two or more individuals,
2. Exist to perform relevant organizational tasks,
3. Share common goals,
4. Interact socially,
5. Exhibit task interdependencies,
6. Manage and maintain boundaries, and
7. Are embedded in an organizational context that sets boundaries, constrains the team, and influences exchanges with other units in or out of the organization.

It is well understood that teams are embedded in an organizational context and the team itself creates a context for team members (Barrick et al., 1998). More specifically, the context of an organization influenced by factors such as technology use, organizational structure, leadership roles, culture, and climate often influences group behaviors. However, organizational context is not the only influencing factor for a particular team. Kozlowski and Bell (2003) assert that "team members operate in a bounded interactive context that they in part create by virtue of their individual attributes, interactions, and responses" (p. 7). As such, group level expectations, shared perceptions, and knowledge emerge from those interactions between group members.

As it is the case that events within teams often reflect the type of people who are its members (George, 1990), considerable research has focused on team composition and the nature of team members (Barrick et al., 1998). Understanding team composition is of

practical and research interest because the combination of member attributes can have a significant impact on team processes and outcomes. A better understanding of these effects can help organizations select and build the most effective teams.

The IPO Model

It is important to understand that this research involves the interpretation of a group as a process. As such, the Input-Process-Output (IPO) model can be utilized to facilitate understanding of the context of group development. "Many, if not most, models of team effectiveness are at least loosely formulated around an IPO framework posited by McGrath (1964)" (Kozlowski & Bell, 2003). Inputs are "the primary cause of processes that in turn mediate the effect of inputs on outcomes" (McGrath, 1964, p. 537). These inputs can represent various resources available to the team both internally, such as composition of knowledge, skills, and abilities of members, personalities, or demographics, or externally, such as rewards, training, or organizational climate. These inputs can also contribute to team functioning at multiple levels including the individual, group, or organizational level.

Further, processes represent mechanisms that either inhibit or enable team members to be able to combine capabilities and influence behavior (Kozlowski & Bell, 2003). For example, Steiner (1972) focused on dysfunctional processes that yielded process losses. Conversely, focus on team effectiveness should be able to reveal process gains. These process gains include, but are not limited to, coordination, cooperation, and communication. Further, outcomes of these processes represent the criteria used to assess the effectiveness of teams. By viewing group research through the lens of the IPO model in this study, we can more clearly understand how individual differences (inputs) may

contribute to the formation of the workgroup emotional climate (process), which, in turn, impacts group cohesion or satisfaction (outputs). While the IPO model lends structure to many models of team effectiveness that helps to create a significant degree of similarity across models, important differences do exist, particularly surrounding the view that processes are caused by input factors (i.e. mediators) or whether the processes are better understood as moderators that affect the input-to-output link (Kowlowski & Bell, 2003). The impacts of these differences on this study will be revisited later in the discussion section of this paper.

Workgroup Emotional Climate (WEC)

In the decades that followed George's publication of *Personality, Affect, and Behavior in Groups* (1990), a growing body of research has focused on group dynamics and group affective tone in the workplace. Work team members' affective experiences and states are implicit in numerous organizational and psychological theories, and researchers have described a variety of different kinds of affective experiences and have shown their important roles in work teams' processes and outcomes (Ashkanasy, Hartel, & Zerbe, 2000; Brief & Weiss, 2002; Fisher & Ashkanasy, 2000; Muchinsky, 2000). For instance, George and colleagues showed that not only do group emotions exist, but also these emotions, which they refer to as "group affective tone," can influence work outcomes (George, 1989, 1990; George and Brief, 1992). Barsade, Ward, Turner, & Sonnenfeld (2000) found that a group's affective diversity also had an effect on team dynamics. Thus, research on group affect has shown that shared emotions occur in organizational work teams and that these emotions can be recognized and measured (Barsade, 2002).

Research on team climate has also proved beneficial for understanding complex group dynamics. Team climate represents group-level shared perceptions of important contextual factors that affect group functioning. For example, Hofmann and Stetzer (1996) demonstrated that team safety climate affects team safety behaviors and outcomes. Further, Anderson and West (1996) developed the Team Climate Inventory as a tool to improve team innovation. Overall, variations in the extent to which climate is shared at the team level has been shown to affect its linkage with team outcomes (Gamero, González-Romá, & Peiró, 2008).

In this study, climate is understood as WEC, or workgroup emotional climate. Defined as "the shared perceptions of emotions and emotional exchanges that typify a workgroup" (Liu, Hartel, & Sun, 2014, p. 626), WEC is similar to George's group affective tone, but conceptualized and measured differently. Whereas group affective tone is measured as an aggregate of individual affective responses, WEC measures the shared perceptions of the emotional climate of a particular group. However, like affective tone, WEC can be either positive or negative. Liu et al. (2014) developed the Workgroup Emotional Climate Scale (WECS) using both qualitative and quantitative methodological approaches to operationalize a multidimensional model of WEC into a valid survey measure to assess WEC. This WECS utilizes a valence dimension (positive-negative) and an interpersonal dimension (ego-focused and other-focused) in order to best represent the social and universal concepts involved in creating the emotional climate in workgroups.

WEC is measured using shared perceptions of employees about their own workgroup because evidence suggests these perceptions are important predictors of both the variability in role behavior of group members and in performance within an

organization (Zohar & Luria, 2005). Instead of focusing on organizational climate as the level of analysis, focus is placed on the group level because individuals are more likely to identify with their proximal workgroup than with an entire organization (Liu et al., 2014). Additionally, Campion, Medsker, & Higgs (1993) found that shared patterns of understanding and behavior norms are most likely to develop at the group level, as well.

Over time, workgroups develop a history of shared experiences (Härtel, Härtel, & Barney, 1998). According to affective events theory (AET), these experiences can shape behaviors of members of a group by eliciting responses to emotional reactions (Weiss & Cropanzano, 1996). These responses are then shared among members to form affective group effects (Barsade & Gibson, 1998). In summary, members transfer their emotional experiences during group interaction through a number of processes to form affective group effects. In turn, these affective group effects are combined with other emotional contexts (i.e., the emotional history of a group, local group norms, or organizational emotion norms) to form group emotion (Kelly & Barsade, 2001).

Together, the concepts of group affective tone, group affect, and WEC capture the idea of group emotion. Barsade and Gibson (1998) argue that two approaches (i.e., top down and bottom-up) can be used to understand group emotion. The top-down approach views the group as a whole and leads researchers to examine how the feelings and behaviors of individuals arise from group dynamics. In contrast, the bottom-up approach examines the ways in which individual level emotions combine at the team level to influence outcomes, and can be represented by mean level affect, variability in the composition of affect, and the effects of minimum-maximum team member affect on the

group. This study employs the bottom-up strategy as a framework to understand how particular individual differences may impact group processes.

It is important to note that this research is based on the premise that individual behaviors influence group behaviors that, in turn, shape the emotional climate of a group. A significant difference exists between perceptions of group affect and the actual experience of change within group affect, and the current study is based on the assumption that behavior change is a reality and influences WEC. Since behavior change can be observed during important social exchanges, as indicated by Liu et al. (2014), a behavioral checklist may be an appropriate way to record behaviors during those important interactions. Bartel and Saavedra (2000) state that a reliable and easily accessible source of information regarding others' feelings and attitudes involves nonverbal behavior, and previous research on facial, vocal, and postural cues support this claim (Eckman & Davidson, 1994; Kappas, Hess, & Scherer, 1991). Not only will the use of this checklist help to verify the WEC, it will also help to alleviate concerns of self-report bias that usually accompany a study that would otherwise rely solely on self-report measures.

In summary, individual behaviors and exchanges between group members are important to WEC. However, understanding the traits linked to those behaviors is also necessary. It is not enough to understand that exchanges influence WEC, but why individuals are prone to behave in certain ways. Examining the relationships between specific traits and behaviors is important in order to gather information on how individual traits can affect WEC.

Individual Differences and Teams

Personality. Meta-analyses have consistently demonstrated relationships between the five factor model (FFM) personality constructs (openness, conscientiousness, agreeableness, extraversion, and emotional stability) and various individual behaviors related to performance criteria (Barrick & Mount, 1991; Hough, 1992; Hough, Eaton, Dunnette, Kamp, & McCloy, 1990; Tett, Jackson, & Rothstein, 1991). Studies like these are important in order to establish that individual traits influence individual behavior. However, a main concern for the current study is establishing that individual behaviors can also influence group behaviors. Barrick et al. (1998) pioneered a study that examined how individual differences in personality affect group dynamics. One of the focuses of their study was to determine which personality traits were associated with positive social interactions, cooperation, and trust within teams. They hypothesized that personality traits such as agreeableness, extraversion, and emotional stability, which are intrinsically interpersonal in nature, are associated with team viability, or a team's capability to continue working together. Although team viability is not the same as WEC, building functional interpersonal relationships between team members is crucial among all concepts.

In addition, research suggests that a single individual can significantly affect a group (Kenrick & Funder, 1988). In some cases the highest (i.e., maximum method) or lowest (minimum method) individual team-member score may provide valuable information beyond what can be understood from calculating the aggregate of the individual scores. This makes sense because the inputs of the highest ability member are critical for generating solutions to problems, and the inputs of the lowest ability member

may significantly affect the quality of the group work (Steiner, 1972). Therefore, focusing on the highest or lowest individual-trait score of team members is appropriate in situations where one person has an inordinate effect on the team. This study explores the relationships between aggregate levels of individual differences in relation to groups as well as the impact that only one individual may have on WEC.

Not only is it important to understand the connection between individual behaviors and team processes, it is also essential to recognize the relationships between the personality traits and affective traits that influence those individual behaviors. In a recent study by Letzring and Adamcik (2015), the FFM personality traits were examined in relation to affective traits. Those researchers found that extraverts are more likely to experience positive affect (PA) and less likely to experience negative affect (NA). Individuals low in emotional stability are more likely to experience NA and less likely to experience PA, while highly agreeable people are less likely to experience NA. If individual personality traits are related to individual affective traits, it follows that there could also be a relationship between individual personality traits and group affect.

Additionally, research by Gray (1971) provides a biological explanation for the relationships between extraversion and positive affectivity, and emotional stability and negative affectivity. Gray contended that there are two neurologically based motivational systems responsible for many of the observed behavioral and emotional differences between extraverted individuals and emotionally unstable individuals. First, the behavioral activation system (BAS) is a neuronal system thought to regulate behavior in the presence of signals of reward. Second, the behavioral inhibition system (BIS), is thought to regulate behavior in the presence of signals of punishment. Gray (1971)

suggested that individuals rely on one system more than the other depending on trait levels of extraversion or emotional stability. Extraversion relates to the rewards system, while low emotional stability relates to the punishment system. Larsen and Ketelaar (1991) contend that is it consistent with Gray's theory to hypothesize that positive and negative affect are the manifestations of sensitivity to reward and punishment, respectively. In other words, an individual will experience positive affect when exposed to signals of reward, and negative affect when exposed to signals of punishment. If extraverted, that individual is more prone to experience positive affect. In contrast, the emotionally unstable individual is more susceptible to negative affect.

According to Barrick et al. (1998), agreeable team members are "helpful, friendly, warm, trusting, and tolerant." Behaviors related to agreeableness are concerned with the quality of interpersonal relationships, such as expressing warmth or empathy (DeNeve & Cooper, 1998). These behaviors are instrumental for developing cooperation in a group. The more agreeable each member of a team is, the more likely the team is to work together cooperatively. For example, Graziano, Jensen-Campbell, and Hair (1996) found that even in tasks designed to elicit conflict, agreeableness was related to less perceived conflict and more positive perceptions from the "opposing" participants. Additionally, it should be the case that members with similar levels of agreeableness should have similar styles of conflict management. This is important because effectively mediating differences should improve coordination (Jackson, Stone, & Alvarez, 1992) and, in turn, foster a positive affective climate.

A single disagreeable member also may be enough to undermine the team's capability to work together, regardless of the level of agreeableness of other team

members. A very disagreeable person may make team membership costly in terms of social rewards (Thibaut & Kelley, 1959) and weaken interpersonal relationships within the team. This destruction of positive interpersonal relationships would likely undermine a positive WEC, so it follows that teams with higher scores for the least agreeable member will more highly positively correlate with a positive WEC.

Hypothesis 1: Teams with higher mean levels of individual agreeableness will report a more positive WEC.

Hypothesis 2: Teams with higher scores for the least agreeable member will report a more positive WEC.

As stated above, extraversion is another personality trait that should be related to WEC. Extraverts are high energy, social, and optimistic. As stated by DeNeve and Cooper (1998), extraversion includes behaviors focused on the quantity and intensity of relationships as well as behaviors requiring high energy and those behaviors associated with seeking excitement. McCrae and Costa (1987) argue that extraversion incorporates a measure of positive affectivity, and individuals high on positive affectivity are prone to have an overall sense of well-being and experience more positive emotional states. These positive emotional states influence our connections with others by enhancing relationships. Enhanced relationships help to increase communication and cooperation, which contribute to a more positive WEC. Therefore, it should be the case that teams that consist of higher extraversion scores should experience a more positive workgroup emotional climate.

Hypothesis 3: Teams with higher mean levels of individual extraversion will report a more positive WEC.

Finally, research suggests that emotional stability may also affect the team's capability to continue working together (Letzring & Adamcik, 2015). In the workplace, emotional stability refers to “an individual’s level of self-confidence and balance with respect to work, and to the individual’s response to new and ambiguous tasks” (Barrick & Mount, 1991). In addition, Barrick et al. (1998) state that unstable people tend to demonstrate more anxiety and negative affect. These people are uncomfortable in ambiguous work environments and become insecure when placed in such situations. This leads to decreased self-confidence and increased fear of failure. In fact, Heslin (1964) concluded that emotional stability is one of the best predictors of team performance outcomes, particularly of measures associated with cooperation and emotional consistency. Therefore, higher aggregate levels of emotional stability should lead to a more relaxed atmosphere that should promote a highly positive WEC.

Hypothesis 4: Teams with higher mean levels of individual emotional stability will report a more positive WEC.

In contrast, low emotional stability, what Watson and Tellegen (1985) referred to as negative affectivity, is likely to suppress or inhibit cooperation and undermine a positive workgroup emotional climate. As evidence of this, George (1990) reported that

teams with negative affective tones engaged in less prosocial behavior (r = -.57). Thus, teams with a greater tendency toward anxiety or negative affectivity are likely to be less capable of continued positive interactions. However, inclusion of a single team member who is emotionally unstable may also create a negative affective tone that makes it difficult for the team to work together.

Hypothesis 5: Teams with higher scores for the least emotionally stable member will report a more positive WEC.

Trait Affect. As stated earlier, individual differences involving affect can also influence behavior. Affect can be understood in two ways. Trait affect refers to an individual's stable underlying affective disposition (Staw, Bell & Clausen, 1986) whereas state affect is a shorter-term reaction, which is provoked in a specific context, subject to a greater degree of fluctuation (Tellegen, 1985). Generally, trait affect is categorized into positive affect (PA) and negative affect (NA). PA is the degree to which a person exhibits a high level of enthusiasm, energy, mental alertness, and determination (Watson & Tellegen, 1985), whereas NA pertains to the extent to which an individual experiences subjective distress, including irritability, anxiety, or nervousness (Watson & Clark, 1984). PA has been found to be significantly associated with job satisfaction, team commitment, turnover intentions, absenteeism, and work performance (Cropanzano et al., 1993; Staw et al., 1986).

Further, research findings have demonstrated a relationship between happiness and workplace success (Judge, Thoresen, Bono, & Patton, 2001; Wright & Cropanzano,

2000). Happy people earn more money, perform better, and commit to more helpful acts that typically exemplify success at work (DeNeve & Cooper, 1998). As such, it follows that positive affect leads to improved workplace outcomes. Compared with other members of a work team, those team members with positive affect should experience greater well-being, and perceive themselves as "active, self-efficacious, decisive, social, and positive" (Barsade et al., 2000; McIntyre, Watson, Clark, & Cross, 1991; Watson et al., 1988). Therefore, a group consisting of members with high PA and diminishing NA should experience a highly positive WEC.

Hypothesis 6: Teams with higher mean levels of member PA will report a more positive WEC.

It might also be the case that a group with an individual with high NA will experience a less positive WEC. Because Watson and Tellegen (1985) likened low emotional stability to negative affectivity, the same rationale as provided for hypothesis four is relevant here. An individual high in negative affect is likely to inhibit cooperation and undermine a positive WEC.

Hypothesis 7: Teams including the member with the lowest NA score will report a more positive WEC.

Cohesion

In addition to understanding inputs, an important concern for some researchers is the significance of outcomes related to group processes. Shaw (1981) suggested that there

is consistent evidence that group effectiveness, cohesiveness, morale, group motivation, and communication efficiency are positively related to the composition of such individual-level attributes as adjustment, emotional control, and emotional stability, and negatively related to such attributes as depressive tendencies, neuroticism, paranoid tendencies, and pathology. It has been argued that teams with members who are more similar affectively will be more comfortable with each other's interpersonal interactions, thereby generating more cooperation, trust, social integration, and cohesion (Stokes, 1983). It might be the case that these individual attributes affect WEC, which, in turn, affects these significant outcomes. For example, Barsade et al. (1998) examined the dispositional positive affective similarity among members of senior management teams and found that affective similarity has a positive effect on group outcomes.

One important outcome to be explored in this research is team cohesion. Team researchers have offered multiple definitions of cohesion. Festinger (1950) defined cohesiveness as "the resultant of all the forces acting on the members to remain in the group." Goodman, Ravlin, and Schminke (1987) defined cohesion as the commitment of members to the group's task. However, Evans and Jarvis (1980) concluded that "member attraction to the group" is the most common definition of cohesion. Mixed results for the effects of cohesion on performance, however, have led researchers to suggest that it may be more complicated.

Gross and Martin (1952) described cohesion in terms of two underlying dimensions, task cohesion and interpersonal cohesion. Task cohesion is defined as a group's shared commitment or attraction to the group task or goal, and is thought to increase commitment to the task and to increase individual effort by group members on

the task. Interpersonal cohesion is defined as “the group members’ attraction to or liking of the group” (Evans & Jarvis, 1980). Interpersonal cohesion is important because it allows groups to have less inhibited communication and to become more effective in coordinating group efforts. Interpersonal cohesion seems to be most related to WEC, and, therefore, is the dimension of cohesion of interest here.

Cohesiveness is important because it can be used to measure the success of a group. This is the case because a group with higher levels of cohesion is more likely to keep its members than a group with lower levels of cohesion. A highly cohesive group develops a greater sense of team spirit and camaraderie. This leads to increased cooperation between group members. In fact, Barrick et al. (1998) found that teams high in extraversion and emotional stability had higher levels of social cohesion. As such, mean individual scores on the WECS will be correlated with mean individual scores from the cohesiveness scale in order to examine the relationship between WEC and cohesion at the individual level.

Hypothesis 8: Positive WEC will positively correlate with team cohesion.

Although the ideas regarding the effects of group emotion on team effectiveness are intriguing, research is necessary to determine the most effective ways of influencing group outcomes through affect. Kozlowski & Bell (2003) ask the following question: “Is it best to control group affect by establishing norms, or will it be more effective to select team members based on affective individual differences?

Method

Participants

The sample consisted of 105 undergraduates working in 31 groups of 3-7 members (24 groups of three, 4 groups of four, 2 groups of five, and 1 group of seven) for a variety of class projects in either the Engineering (59%) or the Psychology (41%) departments at a mid-sized university in the Midwest. Participants were recruited after researchers contacted professors utilizing group work in classes. Tasks which students were required to work on in their groups included lab-based experiments, organizing and conducting research experiments and creating and presenting methods proposals. Task length ranged from four weeks to semester-long projects. Data collectors directly explained the project to the students during class and confidentiality was guaranteed. Group members who agreed to participate completed the surveys on paper (25.7%) or electronically through Qualtrics, a survey distributing website (74.3%). The gender split was 44.8% male and 49.5% female; 81% identified as Caucasian; the ages ranged from 18-50 years old with the majority of responses from ages 18-22 (82.9%); 33% were freshman, 11.4% were sophomores, 15.2% were juniors, and 34.3% were seniors; and the majority of the sample declared either Chemical Engineering (50.5%) or Psychology (40.2%) as an undergraduate major. All participants who completed the five surveys were compensated with a ten-dollar Amazon gift card for participation in the study.

Thirty-eight groups were initially included in the study; however, seven groups were dropped because only one individual from each of these groups responded to all five surveys. The minimum criterion for inclusion in the study was for 50% of group members to have provided complete responses (V. Rousseau & Aubé, 2010), and is

imperative to allow for analysis at a group-level, not solely an individual-level. Further detail on multi-level analysis is provided in the Analytical Strategy section of this paper.

Measures

Five measures were used in this study: the Goldberg Mini Marker, the Workgroup Emotional Climate Scale (WECS), the Positive and Negative Affect Schedule (PANAS), the Observer's Instrument for Work Group Mood, and the Social Cohesiveness Scale.

Goldberg Mini-Marker. The Goldberg Mini-Marker is a briefer version of Goldberg's Unipolar Big Five Markers. The Mini-Marker includes 40 items, and has been demonstrated to be both valid and reliable, alpha = 0.84, Saucier (1994). In this study this scale measured moderate internal consistency, alpha = 0.71. This measure provides a list of adjectives that the participant can identify with which relate to the Big Five personality traits. Example adjectives include: "kind," "daring," and "jealous."

WECS. The Workgroup Emotional Climate Scale was developed in order to assess WEC. Liu, Hartel, and Sun (2014) created this this 58-item scale as well as provided evidence supporting high reliability and validity (alpha levels ranged from .70 to .83, in this study alpha level ranged from .66 to .80. Example items include: "The dynamics among the members of the team are harmonious," and "The atmosphere of the team is boring." Responses were asked to indicate the extent to which each statement was true of their workgroup on a 5-point scale ranging from 1 (Not at all) to 5 (Completely). Note that this scale is dimensional and separated as positive WEC and negative WEC in analyses.

PANAS. The PANAS is comprised of two mood scales, one that measures PA, and one that measures NA. This instrument can indicate relationships between positive

and negative affect with other variables such as personality traits. Ten descriptors are used for each scale to define their meanings. Participants are required to respond to this 20-item test using a 5-point scale that ranges from very slightly (1) to extremely (5). Reliability and validity reported by Watson (1988) was moderately good. The Cronbach alpha coefficient for the PA Scale was 0.86 (alpha = 0.81 in this study); for the NA scale was 0.87 (alpha was the same for this study). Example scale items include: "nervous," "active," and "proud."

Observer's Instrument for Work Group Mood. This instrument permits behavioral assessments of different mood states (Bartel & Saavedra, 2000). It consists of 94 behaviors including facial, vocal, and postural indicators in order to adequately assess the affective state of the observed individual. Two researchers used a portion of the original behavioral checklist (27 items) while observing interactions among group members. Sample behaviors on this checklist include: talking a lot, little facial movement, and body poised to include group members.

Social Cohesiveness Scale. Cohesiveness was assessed using a scale developed by Stokes (1983). This scale consists of seven items, and participants respond using a 5-point scale with options ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Examples of items include "Team members consistently help each other on the job" and "The members of this team got along well with each other." Alpha coefficient was 0.87. Alpha was .87 in this study, as well.

Procedure

Data collection began in fall of 2015. All participants were informed that participation in this study was voluntary. It was made clear to students that one or more

researchers involved in this study would observe their behaviors in person over the course of the semester. Distribution of measures was spaced (see timeline below) in order to alleviate percept-percept inflation.

At Time 1 (within the first week of initial contact), the information sheet was distributed. An electronic link to the first Qualtrics survey was provided during this time. Paper copies were distributed when requested. The survey consisted of The Goldberg Mini-Marker, the PANAS, and demographic questions.

At Time 2 (week two), the second survey consisting of the Workgroup Emotional Climate Scale was either distributed or made available online.

At Time 3 (week three), the third survey consisting of the Social Cohesiveness Scale was either distributed or made available online. Also, during this time, in person observations of all groups occurred. Observation times for each group ranged from four to six minutes and two independent researchers rated each group. All groups were observed consecutively during the class period, and no groups were omitted.

At Time 4 (week four), the WECS was distributed for the second and last time.

At Time 5 (week five), the Social Cohesiveness Scale was distributed for the second and final time. Also, during this week, second observations of the groups occurred. Observation times for each group ranged from four to six minutes and two independent researchers rated each group. All groups were observed consecutively during the class period, and no groups were omitted.

Analytical Strategy

Correlational Analysis

A common way to analyze the relationships between individual level variables and group level variables is to aggregate the scores at the individual level and compare those mean scores to the group score (Williams & Sternberg, 1988). The underlying assumption behind this analysis is that a certain amount of a characteristic of an individual group member increases the level of that characteristic within the group. According to Barrick et.al (1998), This is particularly important when focusing on additive group tasks. If groups are performing an additive task, that is a task that requires the contribution of each team member to produce a successful outcome, mean level (or aggregate) analysis is applicable. Since all participants in this study were engaged in group work that culminated in either a series of small group projects or one large collaboration, an aggregated analysis is relevant. Barrick et. al (1998) utilized this type of analysis, and since the research hypotheses in this study are heavily influenced by that work, a similar approach is initially presented here. Personality traits and affective variables were aggregated and compared to overall WEC score. WEC was also correlated with cohesion as an outcome variable.

In addition to an aggregated analysis of individual level traits, a second correlational technique focused on the potential impact of a single individual in the group (Kenrick & Funder, 1988). Depending on the hypothesis, either the highest or lowest scores of each group were extracted and correlated with WEC.

Although these correlational analyses are supported by past research, current research has indicated that this type of analysis addresses between-group variance but

does not address within-group variance. Nested data, such as individuals nested within groups, requires a more sophisticated analytical technique, described in further detail below, in order to take into account this within-group variance (Robson & Pevalin, 2016).

Multi-Level Modeling

Multi-level modeling, also referred to as hierarchical linear modeling (HLM), separates between- and within-group variance so that data can be examined from multiple levels. When the basic assumptions of linearity, normality, and homogeneity of variance are met, we can examine the behavior of a level one (e.g., the individual-level) outcome as a function of both level one and level two (e.g., the group-level) predictors (Robson & Pevalin, 2016). Two types of hierarchical linear models will be tested. The first is the random-coefficients regression model (Robson & Pevalin, 2016). This model supposes that each of the individuals in the sample has a different regression model, each with its own intercept and slope and that these intercepts and slopes are a random sample from a population of individual parameters. Using this model, we are able to examine the influence of level-one personality traits on level-one WEC without including a level two predictor (i.e., WEC or demographic variables). The dependent variable of positive WEC is treated as a univariate measure. The statistical model is as follows:

$$Y_{it} = \beta_0 + \beta_{it}(X_{it} - \bar{X}) + r_{it}$$

where Y is the dependent variable (i.e., WEC) for participant i in group t, B_0 is the intercept, B_{it} is the regression coefficient (slope) for participant i in group t, X is the predictor variable (i.e., personality traits each subtracted from its group mean $\bar{X}$) for participant i in group t, and r_{it} is an error term.

The second model to test the relationships between level one and level two variables in this study is the Slopes-as-Outcomes model. This is different from the random coefficients model because it includes WEC as a moderator of the relationship between individual personality traits and group cohesion. When including a group level outcome (i.e., cohesion) we can assess if the group-level variables (i.e., WEC, demographic variables) moderate the relationships between the individual-level personality variables found in the random-coefficients model. Ultimately, this model will help us to understand if the previously mentioned IPO model is an accurate representation of the relationships between individual personality characteristics, workgroup emotional climate, and cohesion. In order to see these relationships more clearly, the gammas (ϒ) are used like regression weights for the group level variables on the slopes of the relationships between the individual-level variables and compared. The statistical model is as follows:

$$Y_{it} = \gamma_{00} + \gamma_{10}(X_{it} - \bar{X}) + \gamma_{11}(Z)_i(X_{it} - \bar{X}) + r_{it}$$

where Y is the dependent variable (i.e., cohesion) for participant i in group t, γ_{00} is the intercept, γ_{10} is the regression coefficient or slope for participant i in group t, X is the predictor variable (i.e., personality traits each subtracted from its grand mean $\bar{X}$) for participant i in group t, γ_{11} is the regression weight of the group level variables Z on the slopes of the individual-level relationships, Z is the group-level independent variable (e.g., WEC) for participant i, and r_{it} is an error term.

It is important to establish that more variance exists between groups than within groups in order to justify examining groups as a level of analysis (Gamero et al., 2008).ICC (intra-class correlation analysis) was examined at the group level to examine

any difference in variance between the group level and the individual level. In addition to correlational analyses and multilevel modeling, reliability analyses were performed on the all scales. Cohen's Kappa was also used to examine inter-rater reliability when using the Observer's Instrument for Workgroup mood.

Results

Descriptive Statistics

Descriptive statistics for all individual personality and affective variables are reported in Table 1. Results indicate that participants on average were neither extraverted nor introverted (m= 5.3, SD=1.33), moderately agreeable (m=7, SD=1.12), slightly to moderately conscientious (m=6.6, SD=1.24), slightly more emotionally stable (m=5.9, SD=1.21), and slightly more open to new experiences (m=6.4, SD=1.01). They experienced moderate to high levels of positive affect (m=3.5, SD=0.50) and a low levels of negative affect (m=2.1, SD=0.64). The lowest individual agreeableness score per group ranged from 3.9 to 8, the lowest individual emotional stability score per group ranged from 3.3 to 6.9, and the highest individual negative affect score per group ranged from 1.4 to 4.3. Individuals reported strong levels of group cohesion (m=4.09, SD=0.42) and positive WEC (m=3.89, SD=0.48), and low to moderate levels of negative WEC (m=2.26, SD=0.51). Groups reported moderate to strong positive WEC (m=3.87, SD=0.34), and low to moderate negative WEC (m=2.29, SD=0.34).

Table 1 *Descriptive Statistics*

	N	**M**	**SD**
Individual-Level			
Extraversion	100	5.34	1.33
Agreeableness	100	7.00	1.12
Conscientiousness	100	6.62	1.23
Emotional Stability	100	5.89	1.21
Openness	100	6.39	1.01
Negative Affect	99	2.06	0.64
Positive Affect	99	3.48	0.50
Positive WEC	105	3.89	0.48
Negative WEC	105	2.26	0.51
Cohesion	95	4.09	0.42
Lowest Agreeable Score (per group)	31	6.04	1.02
Lowest Emotional Stability Score (per group)	31	5.05	0.95
Highest Negative Affect Score (per group)	31	2.57	0.63
Group-Level			
Positive WEC	31	3.87	0.34
Negative WEC	31	2.29	0.34

Though we collected observational data on each group, that data was not enough to validate the use of self-report measures. A sample of the data collected is shown below. Table 2 displays the frequency of high-activation, pleasant, low-activation, and unpleasant behaviors observed for each team by one observer during one observation period.

Table 2 *Observational Data*

	Frequency			
	High Activation	*Pleasant*	*Low Activation*	*Unpleasant*
Team 1	2	12	1	2
Team 2	2	14	1	1
Team 3	2	15	3	1
Team 4	3	22	2	0
Team 5	2	12	7	3
Team 6	1	21	5	3
Team 7	4	27	1	0
Team 8	3	25	4	1
Team 9	2	26	5	1
Team 10	5	29	1	1
Team 11	1	21	6	1
Team 12	3	23	3	1
Team 13	1	16	7	3
Team 14	3	24	2	0
Team 15	1	17	10	2
Team 16	1	9	7	3
Team 17	0	2	7	4
Team 18	3	19	0	0
Team 19	1	9	3	1
Team 20	1	13	7	4
Team 21	2	16	2	1
Team 22	2	15	2	1
Team 23	3	24	2	0
Team 24	0	11	11	3
Team 25	5	23	2	0
Team 26	0	12	14	3
Team 27	2	24	2	0
Team 28	1	27	3	0
Team 29	1	21	4	0
Team 30	1	17	5	0
Team 31	3	21	1	1

Correlational Analyses vs Multi-Level Modeling

Correlational analyses and multi-level modeling were used to examine the data in this study. Using correlational analysis, only hypothesis eight was supported. However,

results involving personality traits, WEC, and cohesion were also significant. Multi-level modeling was the second type of analyses conducted and involved two different types of models: the random-coefficients model and the slopes as outcomes model. Multi-level modeling yielded significant results for hypothesis six as well as significant results related to negative WEC and positive and negative affect that were not originally hypothesized. All mentioned results are outlined below, and implications of these findings are discussed later in this paper.

Correlational Analyses

As previously stated, none of the hypotheses except hypothesis eight were supported. Correlational coefficients are reported in Table 3. Mean agreeableness was not significantly correlated with positive WEC, $r(98) = .119$, n.s. The lowest agreeable scores from each group were not significantly correlated with a positive WEC, $r(29) = -.101$, n.s. Mean extraversion was not significantly correlated with WEC, $r(98) = .081$, n.s. Mean emotional stability was not significantly correlated with positive WEC, $r(98) = .012$, n.s. Although not supported, the lowest emotionally stable scores were nearing significant correlation with positive WEC, $r(29) = -.350$, $p=.054$. Mean positive affect was not significantly correlated with a positive WEC, $r(97) = .179$, n.s. The highest negative affect scores of each group were not significantly correlated with positive WEC, $r(29) = .338$, n.s. However, individual mean scores for positive WEC significantly positively correlated with individual mean scores for cohesion, $r(93) = .455$, $p<.01$. While only one of the eight hypotheses was supported, other significant results are worth mentioning. Mean openness was significantly correlated with positive WEC, $r(98) = .20$, $p<.05$. Negative WEC was significantly negatively correlated with cohesion, $r(93) = -$

.354, p<.01. Finally, agreeableness was significantly negatively correlated with negative WEC, $r(98) = -.247$, p<.05.

Table 3 *Correlations between Personality/Affect Variables and WEC*

		Pos WEC	Neg WEC	Extra	Agree	Con	ES	Open	PA	NA
Positive WEC	r	1	**-.557****	.081	.119	.009	.012	**.200***	.179	-.104
	p		.000	.426	.238	.932	.902	.046	.076	.307
	N	105	105	100	100	100	100	100	99	99
Negative WEC	r	**-.557****	1	-.153	**-.247***	-.007	-.080	**-.212***	-.165	.187
	p	.000		.127	.013	.944	.429	.034	.103	.064
	N	105	105	100	100	100	100	100	99	99
Extraversion	r	.081	-.153	1	.162	**.254***	.159	.075	**.318****	**-.408****
	p	.426	.127		.107	.011	.114	.460	.001	.00
	N	100	100	100	100	100	100	100	99	99
Agreeableness	r	.119	**-.247***	.162	1	**.276****	.181	**.284****	**.344****	**-.248***
	p	.238	.013	.107		.005	.072	.004	.000	.013
	N	100	100	100	100	100	100	100	99	99
Conscientiousness	r	.009	-.007	**.254***	**.276****	1	**.201***	**.265****	**.532****	**-.353****
	p	.932	.944	.011	.005		.045	.008	.000	.000
	N	100	100	100	100	100	100	100	99	99
Emotional Stability	r	.012	-.080	.159	.181	**.201***	1	-.043	.141	**-.482****
	p	.902	.429	.114	.072	.045		.669	.163	.000
	N	100	100	100	100	100	100	100	99	99
Openness	r	**.200***	**-.212***	.075	**.284****	**.265****	-.043	1	**.212***	-.061
	p	.046	.034	.460	.004	.008	.669		.035	.549
	N	100	100	100	100	100	100	100	99	99
Positive Affect	r	.179	-.165	**.318****	**.344****	**.532****	.141	**.212***	1	**-.321****
	p	.076	.103	.001	.000	.000	.163	.035		.001
	N	99	99	99	99	99	99	99	99	99
Negative Affect	r	-.104	.187	**-.408****	**-.248***	**-.353****	**-.482****	-.061	**-.321****	1
	p	.307	.064	.000	.013	.000	.000	.549	.001	
	N	99	99	99	99	99	99	99	99	99

*Note: Pos WEC is Positive WEC, Neg WEC is negative WEC, Extra is Extraversion, Agree is Agreeableness, Con is conscientiousness, ES is Emotional Stability, Open is Openness, PA is Positive Affect, and NA is Negative Affect *p < .05, **p<.01*

Multi-Level Modeling

Random-Coefficients Model Results

ICC for the null positive WEC model was 0.33, which means that 33% of the variability in positive WEC scores can be explained by group differences. This suggests that a multi-level model is necessary because WEC scores are dependent on group differences and not just differences in the individual scores. Note that due to issues of power, a simple regression approach was taken such that only one dependent and one independent variable were included at a time in each analysis. In all, ten analyses were conducted. Table 4 displays results of each of these HLM analyses in which only level-one (i.e. individual-level) variables were included. For the first seven analyses, the regression coefficient indicates the estimate average slope representing the relationship between individual personality variables and positive WEC. Results showed no support for the hypotheses involving the Big Five personality traits. However, results did show support for hypothesis six; there is a significant effect of positive affect on positive WEC (β = 0.27, $t_{(30)}$ = 2.60, $p<.05$). This means that the grand mean for positive WEC increases or decreases by 0.27 units with a one unit increase or decrease in positive affect. In addition, although not originally hypothesized, the main effect of negative affect on positive WEC is also significant (β = -0.23, $t_{(30)}$ = -3.12, $p<.01$). That is, negative affect has a negative impact on positive WEC. The next three analyses in Table 4 represent other significant relationships not included in the original hypotheses. Although only positive WEC was involved as an outcome variable in the original hypotheses, negative WEC was also examined using multi-level modeling. Openness (β = -0.62, $t_{(30)}$ = -3.50, $p<.01$), emotional stability (β = 0.63, $t_{(30)}$ = 2.44, $p<.05$), and conscientiousness (β =

0.37, $t_{(30)}$ = 3.40, *p<.01)* all had significant effects on negative WEC. Not, however, that an increase in either emotional stability or conscientiousness increases negative WEC overall.

Table 4 *Random Coefficients Regression Results*

	Positive WEC	**Negative WEC**
Agreeableness	0.015	-
Extraversion	0.013	-
Conscientiousness	0.054	**0.372****
Emotional Stability	0.137	**0.636***
Openness	-0.05	**-0.621****
Positive Affect	**0.269***	-
Negative Affect	**-0.231****	-

*Note: *p<.05, **p<.01*

Slopes-as-Outcomes Model Results

To further examine a variation in slopes, group-level variables were included in a slopes-as-outcomes model (level-two). Table 5 displays the results of the analyses when positive WEC serves as a moderator between individual personality traits and group cohesion. The gammas (γ) are the regression weights for the group-level variables on the individual-level relationship slopes. Standard errors are reported and used to detect significance. Positive WEC only significantly affected the relationship between emotional stability and cohesion (γ = -0.47, p<.05). As done previously, the potential impact of negative WEC was also examined. Negative WEC significantly moderates the relationship between individual positive affect and group cohesion (γ = -0.59, p<.05). In

addition to the moderation, two significant direct effects were found. Of all the individual-level variables explored, PA ($\gamma = 0.32$, $p < .01$) and NA ($\gamma = -0.24$, $p < .01$) had direct significant effects on group cohesion.

Table 5 *Slopes-as-Outcomes Model Results*

	Positive WEC	**Negative WEC**
Agreeableness	0.134	-
Extraversion	-0.001	-
Conscientiousness	0.092	-
Emotional Stability	**-0.473***	-
Openness	0.063	-
Positive Affect	0.039	**-0.59***
Negative Affect	0.026	-

*Note: *p<.05*

Discussion

The primary objective of this study was to examine how individual personality inputs may affect workgroup emotional climate. The majority of hypotheses were not supported using correlational analysis, however, the use of multi-level modeling helped to reveal significant relationships that would have been otherwise obscured by using mere correlations. Although the original hypotheses in this study did not include all of the big five personality variables or negative WEC, all variables and negative WEC were explored in all analyses in order to test for possible significant relationships. Significant findings of this study, future research, and practical implications are discussed below.

As mentioned earlier, organizations, teams, and individuals are bound together in a multilevel system. Individuals are nested within teams, and teams in turn are linked to and nested in a larger multilevel system. According to Kozlowski and Klein (2000), this hierarchical nesting and coupling necessitates the use of multiple levels in efforts to understand and investigate team phenomena. These issues are especially important for this study when attributing individual characteristics to a team. Multi-level modeling (the use of HLM) provided a more precise view of the relationships at play than a simple correlational analysis.

The first significant finding using multi-level analysis was the relationship between openness and WEC. It is reasonable to expect that an open individual might be more likely to help foster a positive group climate by accepting or pursuing new ideas or opinions that may result in positive group experiences. Since they are open to new experiences, individuals high in openness might also be more likely to view working with new members as a positive experience. Although this variable was not included in the original hypotheses, future studies should examine all possible relationships between the big five and WEC.

Other significant findings involved individual-level variables and negative WEC. Examining negative WEC was especially important in this study in order to get a more complete picture of the relationships between all variables. In addition to openness, both emotional stability and conscientiousness resulted in significant relationships with negative WEC. However, those relationships are positive. In other words, the more emotional stability or conscientiousness in a group, the more likely that group is to report a more negative WEC overall. These results are directly contrary to the expectation that

high levels of emotional stability should lead to positive perceptions of the group, not negative ones. Perhaps highly conscientious individuals experience a more negative WEC because they feel that other group members are less willing to put in the necessary work on group projects. At this point, however, that is speculation and both of those relationships should be further explored in future studies. It is possible that the modest sample size common in group research and the variability in team size contributed to these counter-intuitive findings. Additional research including larger sample sizes of a diverse population should be conducted in the future.

While significant correlations were not reported between positive affect and positive WEC or negative affect and negative WEC at the individual-level using a correlational analysis, the random coefficients model did reveal significant relationships between both of these individual-level variables and WEC. Positive affect had a significantly positive relationship with positive WEC, and negative affect had a significantly negative relationship on positive WEC. This is understandable since positive affect should lead to more positive feeling about the group in general, and vice versa. Again, these results are particularly important because they demonstrate the necessity of using hierarchical linear modeling when examining nested data. The random coefficients model compared the between-group variance and the within-group variance to assess significance as opposed to the correlational model that did not take into account any group relationship. In other words, HLM allows us to view the whole picture at all levels while correlation can only provide a slice at one level.

Another significant finding was that positive WEC was significantly positively correlated with cohesion. Increased support for this significant relationship is also

demonstrated by the significant negative correlation between negative WEC and cohesion. Both WEC and cohesion scores were aggregated at the individual-level and compared. These results support the understanding that positive group climate is significantly related to positive group outcomes such as cohesion. It is important to understand the relationships between group climate and outcome variables like cohesion in order to understand any potential moderating or direct effects involved.

Additional insights on a moderating effect included a significant moderating effect of positive WEC on the relationship between emotional stability and cohesion in this study. Again, however, this relationship is negative. That is, positive WEC decreases the relationship between emotional stability and cohesion. As for the moderating effect of negative WEC, there was a significant negative moderating effect of negative WEC on the relationship between positive affect and cohesion. This is understandable as a high level of negative WEC might override the positive influence of positive affect. It is also possible that the length of time the groups were together impacted WEC. Changes in WEC may vary significantly over a longer period of time or individual characteristics may influence WEC more heavily at particular points in the group development. It may also be the case that groups who have been together for years will experience WEC differently than those groups who were only together for months or weeks. Future studies should examine the relationship between time and WEC more in depth.

The slopes-as-outcomes model revealed that both positive and negative affect had direct effects on the outcome of cohesion. That is, even without WEC as a moderator, positive affect has a significantly positive impact on group cohesion while negative affect has a significantly negative impact on cohesion. Again, both of these relationships are

understandable, and expected. Positive affect should help foster a cooperative environment with less conflict and more cohesion. Negative affect should have the opposite effect.

While the results indicate that agreeableness was significantly negatively correlated with negative WEC, the same relationship was not significant using multi-level modeling. Further, none of the hypotheses involving individual group member impact on WEC were significant. This does not necessarily mean that one individual does not have more influence on the development of workgroup emotional climate than others in the group, but it does indicate that the mechanisms by which one could influence the group remain unclear.

While the results of this study do contribute to the understanding of individual inputs, WEC, and group cohesion, further research needs to be done in order to understand each of these relationships more completely. One way to accomplish this will be to strive to eliminate self-report bias. Crampton & Wagner (1994) suggest utilizing other methods of collecting data in order to avoid inflated correlation and self-report bias. Though we collected observational data on each group, that data was not enough to validate the use of self-report measures. Additional insights on future studies and implications are discussed below.

Future Research and Implications

Since the concept of WEC is relatively new, future studies should aim to understand how WEC forms over time as well as how best to assess the construct across a diverse population or across groups with varying tasks across time. Future research could also expand on the mechanisms at work involved with the formation and disbanding of

groups and the personal and organizational effects involved with groups with a more positive or more negative WEC. For instance, research should focus on other possible output variables including, but not limited to, occupational citizenship behaviors, conflict, turnover, retention, and collective group intelligence. Cultural differences would also be a ripe area of study. The current study examined a largely white population of college students in North America. More research should be done on the impact of culture on the expression of individual personality variables and the impact of WEC. Similarly, gender should also be examined. It is possible that groups of only one gender experience WEC differently than groups of mixed gender. In fact, additional inputs such as gender or cognitive ability should be examined in order to better understand the development of WEC and the inputs that might influence it. Hierarchy might also affect WEC in a substantial way. All groups in the current study consisted of students in the same class. Status was consistent across the board, but it might be the case that hierarchy has a significant impact on the development of WEC or other outcome variables associated with group work.

Future research should also revisit the IPO model. Mentioned earlier in this paper was the possibility of some important differences in the IPO model regarding the role of the process as a moderator or mediator. Processes can be caused by input factors (i.e. mediators) as opposed to conceptualized as contingencies (i.e., moderators) that affect the input-to-output link (Kozlowski & Bell, 2003). The former point of view is often represented in small group research and is a large reason that research has focused on processes that stem from natural patterns of group interaction (Steiner, 1972). Conversely, the latter approach is more normative and views processes as mechanisms

that enable the group to fit patterns of interaction to team task work flows. Essentially, it allows for these patterns of interaction to affect outcomes through training, leadership, or other techniques to improve the fit of team processes with task-driven requirements which, in turn, enhances the outcome of team effectiveness (Kozlowski, Gully, Salas, et al., 1996). While both avenues provide much opportunity for future research, the relationships within this study tend to align with the former approach. However, future research should be done on exactly how WEC affects the IPO process and if the relationship between WEC and group cohesion would be better conceptualized as a mediating or moderating relationship.

The statistical analyses conducted in future studies is also important. It is imperative that researchers consider within-group variability by using multi-level modeling for nested data. Most significant results in this study were only revealed through HLM, and future studies should utilize HLM or other multi-level modeling tools to effectively explore the relationships between all variables while controlling for group membership.

Finally, with advances in technology, virtual groups are continuing to expand. It would be appropriate to examine individual inputs as well as group outcomes involved with teams that do not meet in person regularly, or ever. This type of research could also include transient groups and explore how individual differences express themselves in ever changing group situations.

While much opportunity exists for researchers to build on this study in the future, the results also provide practical implications for organizations. Managers should have a better understanding of what individual-level variables should be considered when

creating and maintaining groups of people. Openness, positive affect, and negative affect should be examined before creating groups in order to facilitate a positive workgroup emotional climate. Groups with member scores high in openness and positive affect and low in negative affect will likely experience a more positive climate and higher levels of cohesion among members. This is important for managers to recognize so they can re-arrange work groups that have negative WEC in order to facilitate positive WEC and higher levels of cohesion among team members.

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